



STATE OF UTAH
NATURAL RESOURCES & ENERGY
Oil, Gas & Mining

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August 20, 1982

Mr. Harry Pforzheimer, Jr.
Chief Executive Officer
Paraho Development Corporation
Enterprise Building, Suite 300
101 South Third Street
Grand Junction, Colorado 81501-2498

RE: Apparent Completeness Review
of Mining and Reclamation Plan
Paraho-Ute Shale Oil Facility
ACT/047/003
Uintah County, Utah

Dear Mr. Pforzheimer:

The Division has completed the preliminary assessment of the Mining and Reclamation Plan (MRP) for the proposed Paraho-Ute Shale Oil Project. The following enclosure lists the sections found to be deficient in the plan.

If, upon review of this document your staff has questions, please contact us to clarify any unclear areas. If necessary, my staff would be willing to arrange a meeting in our offices to discuss any outstanding issues.

Upon receipt of the requested additional information from your company, we will assess its adequacy and proceed with the completion of the permitting process.

I apologize for any delays or inconveniences we may have created.

Sincerely,

JAMES W. SMITH, JR.
COORDINATOR OF MINED
LAND DEVELOPMENT

JWS/DWH:btb

Enclosure

cc: Bob Heistand, Paraho
Bob Morgan, Dam Safety
Dennis Dalley, State Health
Wayne Hedberg, DOGM
Tom Portle, DOGM
Sue Linner, DOGM
Tom Tetting, DOGM
Dave Darby, DOGM

APPARENT COMPLETENESS REVIEW

PARAHO-UTE SHALE OIL REVIEW ACT/047/003, Uintah County, Utah

Wildlife and Vegetation

Rule M-3(2)(b)

Wildlife habitat should be included as a postmining land-use and revegetation should be planned for wildlife forage utilization, as well as for domestic livestock utilization. If any riparian habitat is destroyed, it should be replaced with similar habitat, due to its importance to wildlife.

Rule M-3(2)(e)

It is not clear how the two revegetation practices of seeding and transplanting shrubs will go together. Will areas be seeded first, then have shrubs planted in or vice versa? What time of the year will transplanting be done? It is stated that container grown plants will be fertilized and irrigated during the first growing season. What kinds of fertilizer will be used and at what rates? How will it be applied? How much water will be applied and at what intervals? Has any consideration of using mulch to stabilize topsoil and help hold water on reseeded areas been made (other than on steep slopes)?

Will there be any differences in reclamation/revegetation practices between the retorted shale pile, fine shale storage pile and general plant site areas?

It is stated that three test plots on retorted shale are planned early on--what treatments are planned for these plots and what species will be seeded and/or transplanted on each? How will success of these plots be determined? What criteria will be used to determine final revegetation techniques and species?

Rule M-3(10)(12)

Monitoring to determine revegetation success should include more than one vegetation transect on the raw shale and plant site areas for a representative sample.

It is not clear exactly how revegetation on the retorted shale and raw fines piles is envisioned. It seems unlikely that colonization of the side slopes will take place when these slopes are made of highly compacted shale or cement-stabilized retorted shale. The ultimate goal of reclamation should be some revegetation on the entire waste piles, rather than just 70 percent of surrounding cover on the pile terraces and nothing in between. Please comment on this.

In line with the objectives section of the Mined Land Reclamation Act (Section 40-8-12[1][b]), an endangered species survey of the area should be done. The applicant should survey for plants and animals listed federally or by the State of Utah. Any areas that will be disturbed should be covered by the surveys.

According to the U. S. Fish and Wildlife Service (USFWS), an active golden eagle aerie has been located in the cliffs along the White River just southeast of the permit area (within one mile of the project site). How will Paraho's activities affect this nest (possibly submit map showing nest in relation to surface facilities)? If it has been determined or seems likely that there will be an impact, how will this be mitigated?

Soil Removal

Rule M-10(14) M-3(1)(f)

A map should be provided which relates soil series and/or complex and available soil depth to soils to be salvaged. The applicant should relate the location of surface facilities and areas to be disturbed to this map.

On page 28 and 32 of the MRP the applicant alludes to the segregation of topsoil and subsoil. In a Lithic Torriorthent, little definition by horizon is observed as these are shallow soils. Possibly a slight color and pH change might be observed. What criteria would be used to achieve this separation of topsoil and subsoil and is it economically justifiable to do this?

The applicant states in Section 3.3, Soils, of the Permit Application that Walknolls are low in nitrogen and phosphorous. Nothing with regard to fertility status of the Otero-Gilson complex is indicated. Please provide more baseline soils data. Data should include, but not be limited to, soil texture, pH, electrical conductivity, sodium absorbtion ratio, boron, iron, lead, molybdenum, selenium, zinc, available nitrogen, phosphorous and potassium, soluble calcium, magnesium and sodium. Sampling should be performed by depth, especially in the Gilson series where the indication is that soils get "extremely saline at depth." This information will assist in proper handling of soil materials.

Soil Protection: What measures will be employed to achieve adequate topsoil stockpile protection? Will drainage be diverted away from piles? Will berms be used to retain soil? Will terraces be employed on soil stockpiles? Will seeding and/or mulching be utilized or will other surface stabilizing agents or measures be used?

How will the development and protection of topsoil stockpiles be correlated with Table 4.10? Once a stockpile is established, protected and revegetated, it is usually not desirable to disturb it prior to its redistribution. Given the sequence of activities associated with the

disturbance attendant to the proposed fines and retorted shale pile expansion, how will stockpiling activities be correlated to stockpile locations given the desire to minimize the disturbance of existing, protected topsoil stockpiles? Which stockpiles will be increased in volume concurrent with raw shale fines disposal area development and retorted shale disposal area development and which will be static with regard to volume?

1. What is the anticipated final depth of each of the stockpiles?
2. What will be the probable dimensions of each stockpile at its greatest extent?
3. What will be the slope of the stockpiles? Will terraces be employed?

The applicant may best address these concerns by providing topsoil stockpile configurations and cross sections.

Rule M-3(1)(e)(g)

Four surficial soils stockpile sites are indicated along with volume estimations for each site (pages 32 and 33). Only 2 of these sites appear on the surface maps. Please provide an accurate map.

Please expand on the use of rip-rap on topsoil embankments in light of soil protection. To what extent would rip-rap cover the soil? How would it be segregated from the soil prior to redistribution? What effect would its use have on the biological integrity of the stockpile? A diverse stand of vegetation can enhance the soil prior to its use for reclamation, thus making it more likely to facilitate revegetation efforts.

Soil Redistribution: In the "Soil Replacement" section (page 42), the applicant states that six inches of coarse material will be used as a buffer strip to prevent upward migration of salts from "saline and sodic waters from the piles."

1. What assurance is there there that this is enough material to accomplish this?
2. It is stated that "fines from rock riprap grading process may be suitable" for this. How was this determined?
3. What is the chemical nature of this material? Is it saline or sodic?

The applicant states that 14 inches of soil will be used to cover the above material as well as all graded surfaces. Is this correct?

1. The implication is that soils will be replaced in the area from where they were stripped. Is this correct? If so, how will this be ensured?

2. The applicant states that the mine operation area will be 705 acres. To replace soil to a depth of 14 inches, the operator would require 1,326,967 cubic yards of soil. This leaves a deficit of approximately 270,000 cubic yards. Please clarify.
3. The above does not account for the roads or drainage systems. What are the reclamation plans for these areas?

On page 42 the applicant states that soil compaction which occurs incident to regrading, will approximate that in "layers in natural surrounding soils". What is the baseline bulk density of the surrounding soil? What method(s) will be employed to measure compaction after regrading?

On page 47 the applicant alludes to the possibility of winter soil redistribution with spring seed bed preparation. The Division is of the opinion that these activities should occur in fall for the the following reasons:

1. The moisture content of soils would be maximum during winter/spring redistribution activities. This increases the likelihood of excess soil compaction and negative effects on soil structure.
2. Wind and rainfall patterns may be such that the potential for excessive erosion would be heightened.
3. Handling soils at these times would result in greater exposure of soil (more surface area), thus loss of valuable soil moisture critical to seed germination.

Rule M-3(2)(c)
M-10(6)

More detail is needed on waste rock handling. The applicant states that all waste rock will be used as riprap (page 35). What will be the duration of this intended usage? How does it relate to the regrading plans on site abandonment? Will this volume be required to achieve approximate original contour (page 38)? In either event, the Division requires information concerning its potential chemical effect on revegetation and/or runoff water quality. If it is highly saline or alkaline it could have adverse effects. Possibly a minimal sampling scheme (pH and EC) could provide an indication as to the necessity of performing additional tests.

Rule M-10(12)

Will any contemporaneous reclamation of the retorted shale disposal area be carried out?

Why was a sprinkler system chosen as opposed to another form of irrigation? The efficiency of water use could be improved by utilizing a trickle irrigation system. Please comment.

Hydrology

Rule M-3(1)(e)

The applicant has shown plans to control runoff from raw shale storage and retorted shale piles. The applicant will need to submit similar plans for controlling runoff from the disturbed and undisturbed areas on and adjacent to the proposed processing facilities.

Specifically, the design plans should include maps and typical cross-sections of the drainage control structures to be implemented to handle the disturbed and undisturbed runoff.

Design calculations should be included which demonstrate that the proposed structures can accommodate (at a minimum), the runoff volume from the 10-year, 24-hour precipitation event.

The design maps should designate locations and sizes of culverts, diversion channels, sediment ponds, berms, etc. The direction and general gradient of the surface drainage flow should also be indicated on the map(s).

The designs for the sedimentation ponds should demonstrate adequate stability (i.e., combined embankment slopes of 5H:1V, stability factor of 1.5 or other acceptable standard engineering methods).

It is recommended that the sedimentation ponds be provided with an emergency spillway to prevent possible failure in the event of a significantly large rainfall event (i.e., spillway should safely pass the discharge from a 25-year, 24-hour storm).

Rule M-3(1)(h)

Applicant must indicate methods to be employed to ensure compliance with the State and Federal effluent standards, prior to discharging runoff or mine waters from treatment facilities into the receiving streams.

Does Paraho plan to develop any wells to obtain water from the Birdsnest aquifer or any other aquifer?

What water will Paraho use in the mining operation, how much, will any be discharged, how will it be contained and what will its quality be?

Will the Paraho operations have any impact on the ground water wells owned by American Gilsonite? Why or why not?

Rule M-5(d)

The applicant should submit plans that will be employed at the cessation of mining operations which insure that the access and intake shafts be sealed in a manner that will prevent interflow of ground water from the Birdsnest aquifer to mine workings and other strata below.

Rule M-10(2)(b)(6)

The applicant states on page 21 of Attachment B of the MRP, that "miscellaneous trash and other refuse" from the plant, mine and construction camp will be disposed of in the retorted shale disposal pile.

The Division questions what the miscellaneous trash and other refuse materials will be.

The applicant will be permitted to dispose of only inert materials in the retorted shale pile. Disposal of other hazardous, toxic or acid-forming wastes must be disposed of in accordance with the standards established by State Health and/or the U. S. Environmental Protection Agency (EPA) federal regulations.

The applicant needs to provide a means for controlling the runoff from the proposed sanitary landfill sites.

Geology

Rule M-3(1)(e)

In development of the ventilation intake adits and inclines, will the Birdsnest zone be sealed off, i.e., cemented or controlled, should excessive seepage or flow be encountered, or simply pumped for usage underground?

Rule M-3(1)(g)
M-10(2)(b)

Figures determining the adequacy of sizing for disposal of foundation concrete, etc., in "basins" or waste water treatment ponds have not been included. It has also been stated that certain "retention ponds" may remain after reclamation. It is not clear which "ponds" or "basins" will be used for disposal of materials and whether adequate storage volume is available. Figures or plans should be presented specifically detailing this portion of the proposal in light of Rule M-10(9).

Rule M-3(2)(c)

American Gilsonite property is indicated to exist under the raw shale reject/fines storage pile. Do these pieces of property contain seams of gilsonite? Have they been mined out? If so, to what depths? Is storage of fines planned in these seams if they are available? Will American Gilsonite Company need to sign off on Paraho's operational plans?

Rule M-3(2)(c)

Approximately 300,000 tons of elemental sulfur are estimated to be produced during the operation. Mention was made within the plan of disposal of "unmarketable sulfur" by emplacement into the retorted shale pile. What is the difference between the amount of produced sulfur and the "unmarketable" amount? In essence, what figures are available to indicate the amount of sulfur to be emplaced into the waste pile?

Section 40-8-12

Shops and main headings as well as proposed extraction panels, NE1, NE2, SE1, N2-a and N3-a, are located directly under the retorts and main buildings located in Section 32. Subsidence calculations, overburden depths and thickness, and specific total percentage extraction estimates for pillars and ramps, etc., should be provided to the Division for development of mitigation procedures or confirmation of no significant subsidence impact.

Rule M-6

The location of the proposed mine portal access road and site access has not been detailed. An adequate map should be presented that includes final completion location for these items.

The large folded map drawing 8103-GY-GI shows a north-south placement of a retention pond dam while small drawing 8103-GY-GI in Attachment A shows an east-west siting. These are contradictory. Which is the more recent or correct?

Rule M-10(4)

Exposed outer slopes of the shale fines storage area will have a seven percent cement/shale proportion treatment placed upon them as a three foot thick outface zone for stabilization. Will this application require expansion joints to minimize any cracking potential caused by weather and seasonal changes?

Rule M-10(6)

Disposal plans for waste oil products, solvents, etc., should be included in the mine plan proposal. Contractual removal of these materials by a licensed agent is recommended.

Slope Stability and Pillar Design

Rule M-10-4

Cross-sections of the pre-existing and postmining topography are needed for the retorted shale storage pile, the raw shale fines storage and soil piles.

For the reclamation plan, it was noted that "research analyses of pile embankment and slope stability showed high safety factors. The safety factors for the retorted shale pile were well over 2.0 for static stability to 1.75 or over for dynamic stability. The safety factors for the raw shale fines were 1.0 for static stability and 1.7 for dynamics." What type of methods were used to arrive at these safety factors? The Division would like to check calculations of method used.

Rule M-3(3)

Did the pillar design account for any water that may enter the bed and its effects upon the rocks involved?

Rule M-10(2)

Has the pillar size around gas wells been designed yet? If so, what criteria were used in the development of reasonable safety factors?

Miscellaneous Sections

Rule M-3(1)(d)

The applicant states on page 17 of Attachment B that the buried Mountain Fuel Supply Company pipeline will be adequately protected from the intersection with the diversion cut. What measures will be utilized to insure protection?

Will this pipeline be undermined by the mining operation? If so, what means are proposed to insure that subsidence will not be a problem? Has Mountain Fuel Supply Company been notified and approved of Paraho's plans?

The Division has been in contact with representatives from the Utah Division of State History concerning the present remains of a previously operated and abandoned "retort" located adjacent to the White River Shale Oil Company properties along the south facing slopes of the White River (southwestern corner of permit area).

The site is not considered to be of significant importance to warrant protective measures, however, it is requested that the site be photographed and the location properly documented and delineated on an appropriate topographic map. This information should be submitted to the Division where it will be filed and also forwarded to State History.

Title 40-8-22

Prior to issuance of final approval, the applicant should provide evidence (listing) that permits from other State and Federal agencies have been obtained and/or applied for.

The Department of State Health, Bureau of Water Pollution Control will need to issue a construction permit for the sedimentation ponds. The Division of Water Rights, State Engineer's office will also issue a construction permit for all impoundments as proposed for the operation.

If the applicant proposes any stream diversion or lateralization work to obtain a water supply, a federal Army Corps of Engineers 404 permit may be required. A State Engineer's office approval would also be necessary to permit the diversion point and any change in water use.

This Division's final approval of the MRP will not constitute approval for the other State or Federal permitting agencies.

Bonding

Rule M-5

The Division cannot make an adequate assessment of the reclamation bond at this time, due to the insufficient detail of breakdown in the reclamation costs provided in the plan (page 52-53, Attachment B).

The Division requests a specific breakdown of projected costs which details the unit costs used to generate the figures in Table 5.2.

The Division suggests that Paraho elect to utilize an incremental method in establishing the performance bond. This bond could be adjusted on a regular basis according to the amount of disturbance at any one time. This will also negate the requirement to post the entire performance bond initially.

Paraho should establish a reclamation cost based upon the "phased" development approach. This could require a cost determination based upon a two or three year projected development schedule, or whatever schedule the company and the Division could agree upon.

The Division still needs to have a good estimate of the total overall estimated reclamation costs for the entire project up front for the Board of Oil, Gas and Mining approval.